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ABSTRACT

This paper reports on a project where three-dimensional (3D) online gaming environments were exploited for the purpose of academic communication and learning. 3D gaming environments are media and meaning rich and can provide inexpensive solutions for educational purposes. The experiment with teaching and discussions in this setting, however, proved that media complexity is not a sufficient condition for successful online learning environments. This paper discusses the background and the two presuppositions of the project; selecting a suitable 3D online environment; the communication format/genre; the interface; the session, which was conducted as a "traditional" academic lecture; and results. (AEF)

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THE 3D LAOKOON — Visual and Verbal in 3D Online Learning Environments

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Abstract

This paper reports on a project where 3D online gaming environments were exploited for the purpose of academic communication and learning. 3D gaming environments are media and meaning rich and could provide inexpensive solutions for educational purposes. The experiment with teaching and discussions in this setting, however, proved that media complexity is not a sufficient condition for successfull online learnig environments.

Background and presuppositions

The project had two founding presuppositions, one concerning economy and popular conventions and the second related to the potential of a rich media form: (1)

1. Just a few years ago several online gaming environments emerged on the market with great success. It soon became obvious that 3D-based online games made it possible to conduct extensive communication and collaborative action in relatively rich graphical environments on the Internet. Thus an interesting opportunity arose in the combination of ICT and learning: Instead of developing expensive 3D-environments from scratch for specific learning purposes it should be possible to exploit existing 'off the shelf' game software. This would mean that we used the online gaming environments contrary to their intention, so to speak, not for leisure gaming but for organized learning. Would it be possible to intervene in such environments, not for the sole purpose of learning the game, but for learning in general? If this assumption was correct time and money could be saved, and at the same time one could benefit from some of the popular interface- and userconventions already developed within game genres, conventions which are often related to problem solving and learning.

2. My interests in 3D online gaming environments was not primarily motivated by their game-structure, but by the potential of 3D itself, as a form of representation. 3D, we might say, is a new kind of sign or sign system. Dynamic and navigable 3D documents is the inherent information type of the computer as a medium, and thus different from more traditional information types such as writing, still images, sound and moving images, which all have emerged within analogue, non-computerized media. Dynamic 3D has the

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fascinating feature that it is capable of re-presentation and may include any of the traditional information types (Liestøl 1999). 3D is situated on top of a hierarchy and embraces the underlying and less inclusive information types. At the bottom of this hierarchy we find writing, which is not capable of representing any other information type. The still image on the other hand is capable of including writing. Further, moving images may include both writing and still imagery. Audio constitute a separate, independent system of various information types and may be synchronized with moving images as in film and television. However, I would argue that inclusion of audio in another information type is only made possible when we operate with sources of sound 'inside' virtual spaces, that is inside dynamic navigable 3D spaces. Thus, 3D documents may include all traditional information types (and more), and as representational forms they serve as places where other information types may appear and interact as combined and integrated units. Given these features the potential complexity of expression and meaning in 3D environments is beyond comparison in the history of media and representation, and consequently it should be of relevance for communication and learning. My interests were particularly focused on how the interplay between information types could be exploited. The following assumption forms the basic motivation for the experiment reported and discussed in this paper: Because 3D is the all-inclusive representational form it should — in theory — be better suited for the purpose of communication (and learning) than for example purely verbal environments like MUDs and MOOs.

Selecting an environment

In order to find a suitable 3D online environment to test this hypotesis several online games and gamelike environments were examined: *Diablo*, *Ultima Online*, *Online traveller*, *Virtual Places* and *Everquest*. (2) To brake with the intentional purpose of the established online environments, it was important for us as users to be able to make imprints in the environments, for example by means of imported custom made graphics. Common to the popular online games, however, where the fact that they exclusively were open to verbal and navigational input, and that the user only to a very limited extent was capable of 'fitting out' the environment (selection of avatar elements, that is the user's graphical representation in the 3D environment). It was not possible in any of the games to import externally produced graphics. This, of course, would limit our expressive means, like a classroom without a blackboard. After experimenting with and evaluating various systems available, *Active World* (AW) was selected. (3) AW is not a traditional online game, but it supports import of various graphical elements (images, movies etc.) and thus would meet our needs for an environment rich on expressive means.

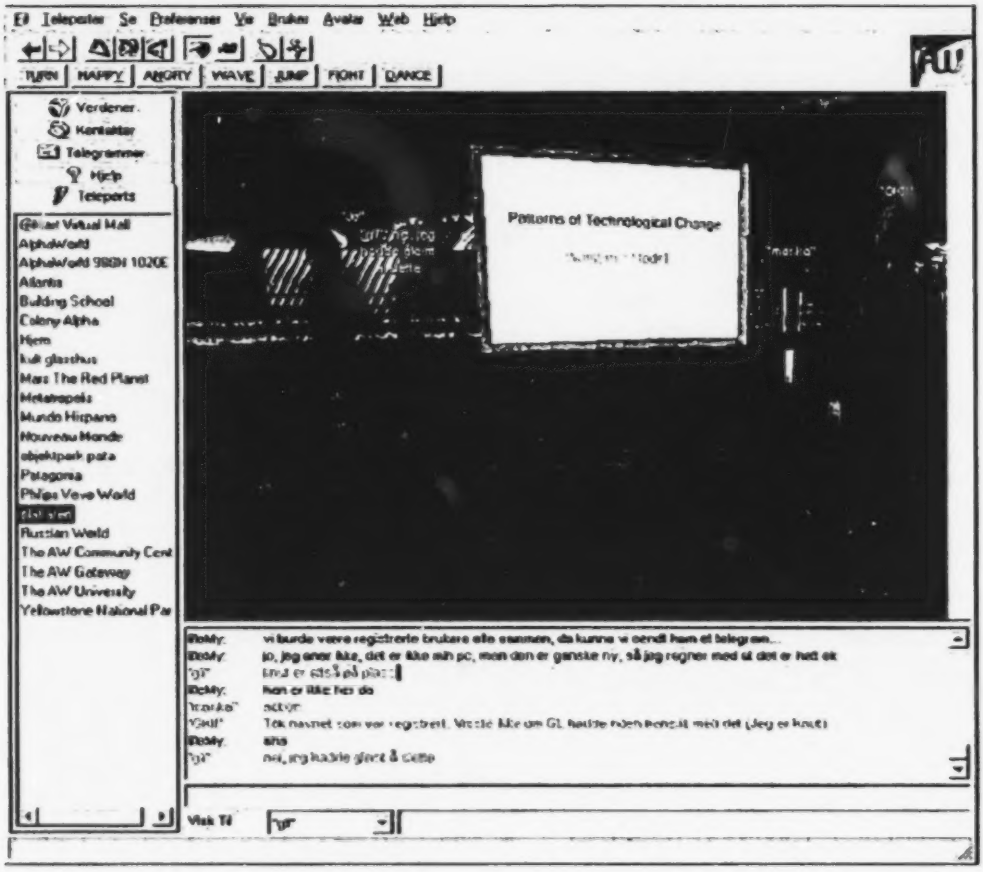
Format/genre

Our activity in *Active World* began by testing the basic functionality. The purpose was to decide which kind of communicational formats or learning genres could be realized in this environment. The initial idea was to recreate some kind of roundtable

discussion/seminar where every participant could view all the other participants, in order to communicate both by means of (written) verbal utterances and 'body' (avatar) behaviour. All participants should be equally represented and positioned in the setting, nobody was supposed to have neither priviliged perspective nor functionality. The purpose was thus to recreate and reconfigure a format inspired by traditional oral forms of academic communication, such as the seminar and the colloqvium.

The investigation of the conditions for creating a roundtable configuration developed into a project of problem solving itself. After a process of trail and error the participants experienced some basic constraints for this kind of mutual communiction in the chosen environment. In order to fulfill the egalitarian premisses and for everyone to see each other, the number of participants, unfortunately, had to be limited to three due to the restricted view of the 'wideangle' perspective. The result was dissapointing and the idea of recreating the 'colloqvium' was abandoned. We were forced to use a configuration that was sequential and a mode of communication that had a one-way, broadcast-like structure. The traditional position in the auditorium/classroom with the teacher in front of the students was therefore chosen.

The *Active World* Interface



The interface in AW consist mainly of two windows: one for graphics that represents the graphical 3D -environment, and one for chat where the exchange of words and sentences are shown in temporal sequence as they are produced. Below the dialogue window there is an input area, where each and every participant write their messages. In the graphical window (into the 3D soace) the actual utterances of the participants are shown as 'bubbles' based on comic strip conventions. The dialogue is displayed both isolated in the chatwindow and intergrated in the graphic environment. On the left side of the picture there is a list of some of the hundreds of different accessable AW worlds. In addition there are several pre-programmed functions related to how avatars move and 'behave' in relation to others. AW also presents opportunities for direct linking to web-pages which may be opened in separate windows.

The Session

The session was conducted as a 'traditional' academic lecture. The topic was 'Brian Winston's theory of media innovation'. (4) A series of five slides were produced in advance and mada available in sequence as visual support for the verbal presentation. At

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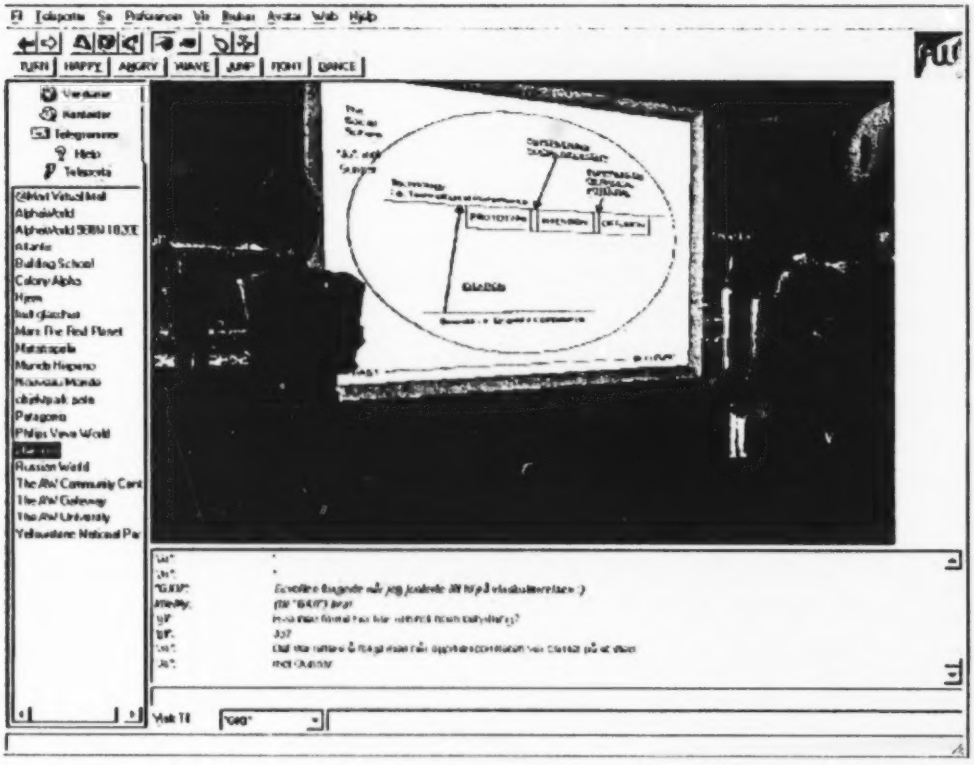
any time the students were invited to ask questions etc. by showing a (double) sign: waving their hand and at the same time typing the sign '*'. Then the teacher (the author of this paper) presented the talk while at the same time showing the various slides on a large blackboard next to him. Several of the comments and explanations of the slides were written in advance and copied to the text field. Due to the coarse of the discussion many of the ready made sentences had to be rewritten and used in a different order.



The talk lasted for approximately 30 minutes, interrupted by questions and discussion. After the presentation we commented upon and discussed our experiences during the session. We all agreed that the session worked well and that the outcome of the talk, in regard to the combination of verbal presentation and use of illustrations, were comparable to a traditonal lecture. Further, it was argued that the spatial dimension added to the experience of relating to persons in different positions, particularily when compared to verbal chat.

However, several of the participants noted that the attention directed towards the 3D graphic window was constantly interferred by the need to look at the chat window. As the dialogue developed, and to catch up with who said what and in which order we more and more focused on the information in the verbal only chat wndow.

Conclusion: Ffgurative versus Verbal

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It was not surprising to find that the participants had a fascinated experience and felt some kind of surplus gain from being represented 'inside' the navigable 3D space. What was rather surprising, though, was that the experiment clearly demonstrated that the written verbal information dominated the process, even though the graphical and figurative aspects had high priority. One of the main premisses for the investigation had been the potential of extended complexity and richness of meaning in 3D-environments. This premiss was explicitly employed in the experiment: Only the graphical window allowed a view of the slides (the central element of the representation) parallell to the written information, while the chat window below only displayed the verbal information. Why did the verbal representation get more attention by the participants, in spite of the fact that the graphical window showed a more complex content, and inspite of the expressed surplus value of spatial positioning? I think the answer to these questions consists of two parts:

1. The chat-convention is supported by a well-established practice from other applications, such as different forms of IRC, and dialogue in verbale solutions. Most of the participants are experienced with verbal only chat-solutions, thus 'bubble' based chat in 3D-displays is a rather new phenomenon. But this cannot be the full explanation.

2. Even if 3D in the opening of this paper was described as a potentially richer environment and form of representation compared to other types of information, it passes on constraints that other and seemingly simpler forms of communication does not have or have defeated. The preliminary development of conventions exploited in 3D have a strong focus on realism, driven forward by the development of the computer game tradition. The recreation of the real world in a representation with continuum in space and time, the highest possible resolution and faithfulness according to the law of physical and visual reality, seems to have the highest priority. This kind of priority does neither gain the user-friendlieness nor an efficient handling of information. In IRC the dialogue is saved as a linear sequence and the structure is therefore easy to navigate. Thes stored conversation also becomes a collective memory. 3D-surroundings lack both these dimensions. Assuming the demand on spatial realism, 3D has so far no convention for displaying history or stored actions and events. 3D-environments are not able to supply the user efficiently with information along the temporal axis. The bubbles do not indicate succession, and it becomes difficult to distinguish between question and answer. The relationship between utterances are disrupted by the spatial organisation.

This shows that for the purpose of communication the illustration or display of temporality is more important than spatiality, in spite of the fact that the 3D environment consists of both unique and more diversified and meaningrich information. Wheather this can be explained as a temporary fenomenon due to an immature medium, is not easy to say, but it indicates the efficiency of verbal communication. (5) And that is worth thinking about when one consider the high priority multimedia currently has.

Notes:

1. This project was part of the Computer Games and Learning project at the Department of Media and Communcation, University of Oslo 1998-2001, funded by ITU <www.itu.uio.no>
2. Several master students at the Department of media and Communication, University of Oslo participated and made substantial contributins to this project: Thanks to Kristin Grønli, Jo Siingstad, Knut Augedal and Marika Lüders.
3. Active Worlds can be found at <www.activeworlds.com>.
4. The topic of the lecture was based on Brian Winston's book Media Technology and Society: A History: From the Telegraph to the internet. London: Routledge 1998.
5. Interessting experiments has been conducted with representation of user histories ini 3D environments, which clearly transcends the reality paradigm (Greenhalgh et al. 2000)

References:

Greenhalgh, Chris et al. 2000 'Temporal Links: Recording and Replaying Virtual Environments' in *Proceedings of the 8th AMC International Conference on Multimedia*, marina del Rey, CA USA, s 67-74

Liestøl, Gunnar 1999 *Essay in Rhetorics of Hypermediaq Design*. Oslo: DEpartment of Media & Communication, University of Oslo, pp. 191-221.

Winston, Brian 1998 *Media Technology and Society: A History: From the Telegraph to the Internet*. London: Routledge.

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